CLAIMS:

1. A method of filtering an optical signal, comprising:

receiving at least one input optical signal;

forming first and second optical signals using the at least one input optical signal;

modifying at least one portion of the first optical signal using a plurality of non-waveguiding electro-optic phase adjusters; and

forming an output optical signal by combining the first optical signal, including the at least one modified portion of the first optical signal, with the second optical signal.

2. The method of claim 1, wherein forming the first and second optical signals comprises forming the first and second optical signals using an optical coupler.

3. The method of claim 1, wherein forming the first and second optical signals comprises providing the first and second optical signals to first and second waveguides, respectively.

4. The method of claim 3, wherein providing the first and second optical signals to first and second waveguides, respectively, comprises providing the first and second optical signals to first and second waveguides having approximately equal optical path lengths.

5. The method of any of claims 1 to 4, wherein modifying the at least one portion of the first optical signal using the plurality of non-waveguiding electro-optic phase adjusters comprises demultiplexing the input optical signal using an optical demultiplexer.

6. The method of claim 5, wherein demultiplexing the input optical signal comprises demultiplexing the input optical signal into a plurality of wavelength bands.

7. The method of claim 5, wherein modifying the at least one portion of the first optical signal comprises providing the demultiplexed input optical signal to the plurality of non-waveguiding electro-optic phase adjusters.

8. The method of claim 7, wherein modifying the at least one portion of the first optical signal comprises introducing at least one phase shift to at least one portion of the demultiplexed input optical signal using at least one of the plurality of non-waveguiding electro-optic phase adjusters.

9. The method of claim 8, wherein modifying the at least one portion of the first optical signal comprises multiplexing the demultiplexed input optical signal, including the at least one modified portion of the first optical signal.

10. The method of any of claims 1 to 9, wherein forming the output optical signal comprises combining the first optical signal, including the at least one modified portion of the first optical signal, with the second optical signal using an optical coupler.

11. The method of claim 1, wherein modifying the at least one portion of the first optical signal using the plurality of non-waveguiding electro-optic phase adjusters comprises providing the at least one portion of the first optical signal to at least one of the plurality of non-waveguiding electro-optic phase adjusters and providing at least one reflected portion of the first optical signal to the at least one of the plurality of non-waveguiding electro-optic phase adjusters.

12. An apparatus, comprising:

an optical demultiplexer;

a plurality of non-waveguiding electro-optic phase adjusters optically coupled to the optical demultiplexer; and

a control unit coupled to the plurality of electro-optic phase adjusters.

13. The apparatus of claim 12, wherein the optical demultiplexer, the plurality of non-waveguiding electro-optic phase adjusters, and the control unit are formed on a planar waveguide platform.

14. The apparatus of claim 13, wherein the planar waveguide platform is at least one of a polymer, a silica-on-silicon, or a semiconductor waveguide platform.

15. The apparatus of claim 12, wherein each of the plurality of non-waveguiding electro-optic phase adjusters comprise:

a first optical transmission medium;

a second optical transmission medium;

a slot disposed adjacent to the first and second optical transmission media, the slot being adapted to receive an electro-optically active element; and

at least one electrode deployed proximate the slot, the at least one electrode being adapted to provide at least a portion of a variable electric field within the slot.

16. The apparatus of claim 15, wherein the slot has at least one curved edge.

17. The apparatus of claim 15, wherein the first optical transmission medium is a waveguide.

18. The apparatus of any of claims 15 to 17, wherein the second optical transmission medium is a waveguide.

19. The apparatus of any of claims 15 to 18, wherein the electro-optically active element is at least one of a liquid crystal and a polymer-dispersed liquid crystal.

20. The apparatus of any of claims 12 to 19, wherein the control unit is capable of providing at least one signal indicative of a desired phase change to at least one of the plurality of non-waveguiding electro-optic phase adjusters.

21. The apparatus of any of claims 12 to 19, wherein the optical demultiplexer is adapted to provide light in a plurality of selected frequency bands to a corresponding plurality of non-waveguiding electro-optic phase adjusters.

22. The apparatus of claim 21, wherein the optical multiplexer is adapted to receive light in the plurality of selected frequency bands from the corresponding plurality of non-waveguiding electro-optic phase adjusters.

23. The apparatus of any of claims 12 to 22, further comprising an optical multiplexer optically coupled to the plurality of electro-optic phase adjusters.

24. The apparatus of claim 23, wherein the optical multiplexer is adapted to combine the light received in the plurality of selected frequency bands.

25. The apparatus of claim 24, wherein the optical demultiplexer and the optical multiplexer are a single device.

26. The apparatus of any of claims 12 to 25, further comprising a mirror optically coupled to the plurality of electro-optic phase adjusters.

27. The apparatus of claim 26, further comprising a wave plate deployed adjacent the mirror and between the mirror and the plurality of electro-optic phase adjusters.

28. An electro-optically tunable optical filter, comprising:

a first optical transmission medium;

a second optical transmission medium;

a first optical coupler for coupling portions of the first and second optical transmission media;

an optical demultiplexer coupled to the second optical transmission medium;

a plurality of non-waveguiding electro-optic phase adjusters optically coupled to the optical demultiplexer;

an optical multiplexer optically coupled to the plurality of non-waveguiding electro-optic phase adjusters;

a third optical transmission medium optically coupled to the optical multiplexer; and

a second optical coupler for coupling portions of the second and the third optical transmission media.

29. The electro-optically tunable optical filter of claim 28, wherein the first, second, and third optical transmission media are waveguides.

30. The electro-optically tunable optical filter of claim 28 or 29, wherein the interferometer is formed on a planar waveguide platform.

31. The electro-optically tunable optical filter of claim 30, wherein the planar waveguide platform is at least one of a polymer, a silica-on-silicon, or a semiconductor waveguide platform.

32. The electro-optically tunable optical filter of any of claims 28 to 31, wherein each of the plurality of non-waveguiding electro-optic phase adjusters comprise:

a first waveguide optically coupled to the optical demultiplexer;

a second waveguide optically coupled to the optical multiplexer;

a slot disposed adjacent to the first and second waveguides, the slot being adapted to receive an electro-optically active element; and

at least one electrode deployed proximate the slot, the at least one electrode being adapted to provide at least a portion of a variable electric field within the slot.

33. The electro-optically tunable optical filter of claim 32, wherein the electro-optically active element is at least one of a liquid crystal and a polymer-dispersed liquid crystal.

34. The electro-optically tunable optical filter of any of claims 28 to 33, further comprising a control unit coupled to the plurality of non-waveguiding electro-optic phase adjusters.

35. The electro-optically tunable optical filter of claim 34, wherein the control unit is capable of providing at least one signal indicative of at least one selected phase change to at least one of the plurality of non-waveguiding electro-optic phase adjusters.

36. The electro-optically tunable optical filter of claim 34, wherein the control unit is capable of providing the at least one signal indicative of the at least one selected phase change such that the interferometer produces a filtered transfer function.

37. An electro-optically tunable optical filter, comprising:

a first optical transmission medium;

a second optical transmission medium;

a first optical coupler for coupling portions of the first and second optical transmission media;

an optical demultiplexer coupled to the second optical transmission medium;

a plurality of non-waveguiding electro-optic phase adjusters optically coupled to the optical demultiplexer;

a control unit coupled to the plurality of electro-optic phase adjusters; and

a mirror optically coupled to the plurality of electro-optic phase adjusters.

38. The electro-optically tunable optical filter of claim 37, wherein the first and second optical transmission media are waveguides.

39. The electro-optically tunable optical filter of claim 37, wherein the interferometer is formed on a planar waveguide platform.

40. The electro-optically tunable optical filter of claim 39, wherein the planar waveguide platform is at least one of a polymer, a silica-on-silicon, or a semiconductor waveguide platform.

41. The electro-optically tunable optical filter of any of claims 37 to 40, wherein each of the plurality of non-waveguiding electro-optic phase adjusters comprise:

a first waveguide optically coupled to the optical demultiplexer;

a second waveguide optically coupled to the optical multiplexer;

a slot disposed adjacent to the first and second waveguides, the slot being adapted to receive an electro-optically active element; and

at least one electrode deployed proximate the slot, the at least one electrode being adapted to provide at least a portion of a variable electric field within the slot.

42. The electro-optically tunable optical filter of claim 41, wherein the electro-optically active element is at least one of a liquid crystal and a polymer-dispersed liquid crystal.

43. The electro-optically tunable optical filter of any of claims 37 to 42, wherein the control unit is capable of providing at least one signal indicative of at least one selected phase change to at least one of the plurality of non-waveguiding electro-optic phase adjusters.

44. The electro-optically tunable optical filter of claim 43, wherein the control unit is capable of providing the at least one signal indicative of the at least one selected phase change such that the interferometer produces a filtered transfer function.

45. A method according to claim 1 substantially as herein described with reference to the accompanying Figures.

46. An apparatus according to claim 12, substantially as herein described with reference to the accompanying Figures.